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ABSTRACT

The results of two recent statewide surveys dramatically underscore the continued expansion and use of technology for instructional and management applications in New York State's school districts. The first survey is the fall 1989 Basic Educational Data System (BEDS) School Data Form Survey, which is completed annually by all public and nonpublic schools. The BEDS Survey requires schools to report on microcomputer, video, and distance education resources. Results of this survey indicate that microcomputers have increased in number primarily in the public schools, with 15,817 new computers in 1 year. A majority of the microcomputers in schools are the Apple II series. Computers were shown to be used both to assist learning and to manage instruction. The use of educational television and distance education are also reported to be on the rise with 91,605 teachers who use video for instruction and 527 schools involved in distance education activities. The second survey is the annual survey of BOCES (Board of Cooperative Educational Services) regional information centers (RICs) and regional computer centers (RCCs). This survey of school district use of computer management services found that 562 school districts are currently using at least 1 student or financial management service, and that use of such services through an online mode of delivery had increased from 341 districts in 1984-85 to 406 districts in 1987-89. Data are presented in both tabular and narrative formats. (DB)

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The expansion of technology in New York State's schools

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by Peter F. Stoll

The results of two recent statewide surveys dramatically underscore the continued expansion and use of technology for instructional and management applications in New York State's school districts. The first survey is the fall 1989 Basic Educational Data System (BEDS) School Data Form Survey, which is completed annually by all public and nonpublic schools. Three items on the BEDS Survey require schools to report information on computer, video and distance-learning resources in the schools.

The data results for the fall 1989 BEDS Survey indicate that there is a total of 189,664 microcomputers in public and nonpublic schools. This is an increase of approximately 17,450 computer units over the total of 172,209 microcomputers reported for fall 1988.

Most of the growth in microcomputers has occurred in the public schools. For example, the total number of microcomputers in nonpublic schools rose from 25,077 in fall 1988 to 26,715 in fall 1989, an increase of 1,638 microcomputers. However, the total number of microcomputers in the state's public schools expanded from 147,132 in fall 1988 to 162,949 in fall 1989, an increase of 15,817 microcomputers in one year alone. Furthermore, there has been an ongoing expansion in the total number of microcomputers owned by New York State's public schools during the past five years. The graph in figure 1 shows the increase in microcomputers owned by public schools from 1985 to 1989.

The fall 1989 BEDS results also provide data on the major microcomputer models acquired by the state's schools. A majority of the microcomputers in the schools are the Apple II series. There are 105,991 Apple II microcomputers, which represent approximately 56 percent of the total installed base of 189,664 microcomputers. The chart in figure 2 shows the statewide distribution of microcomputer models in New York State's public and nonpublic schools for 1989.

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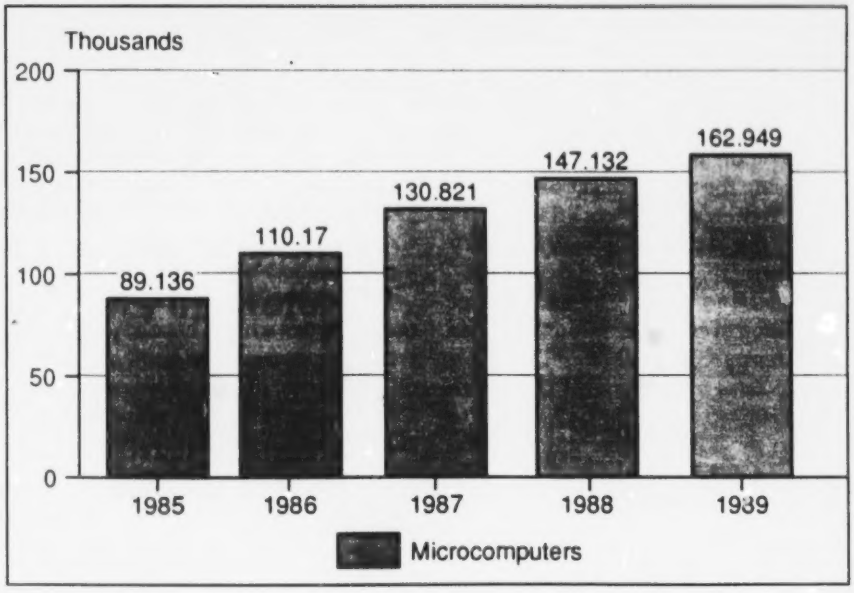

Fig. 1. Number of Microcomputers Owned by New York State's Public Schools, 1985-89

In addition, New York State's schools have acquired the following computer peripherals: 2,129 laser printers, 547 CD-ROM players, 989 plotters and 719 network filer servers. This base of computer peripherals suggests a growing trend in the networking of computers through file servers, the use of tool applications (i.e., word processing), and the use of data bases of information stored on CD-ROM disks in schools.

For the first time the fall 1989 BEDS Survey also asked schools to report on the number of microcomputers modified with adaptive devices. The results show that there are 4,405 computers equipped with adaptive devices that are necessary to increase the access of stu-

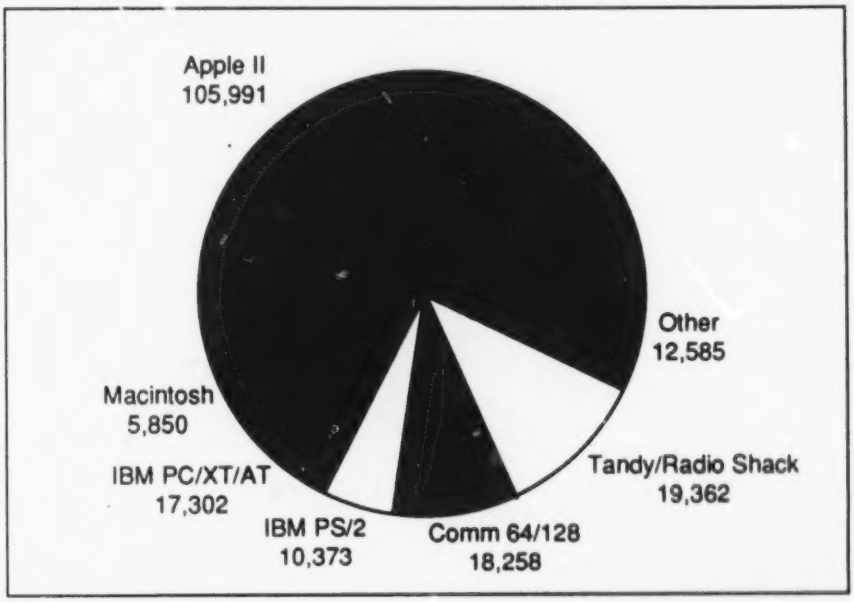

Fig. 2. Microcomputer Brands in New York State's Public and Non-public Schools

dents with handicapping conditions and disabilities to computer technology, computer networks and data bases of information.

Schools were also asked for the first time to indicate whether or not they were using the State Education Department's Technology Network Ties (TNT) system, and 454 schools reported they were using TNT.

It is vital to recognize that the large installation of computer resources within the state's public and non-public schools has provided more students and teachers greater access to the technology to support the teaching/learning environment. For example, the fall 1989 BEDS Survey results indicate that there are 1,969,720 students and 84,119 teachers who regularly use microcomputers for instructional purposes. The phrase *regular use* is defined in the BEDS Survey as "direct interaction with a computer or computer terminal, as a part of a planned sequence of instructional activities, either as an instructional tool or as an object of instruction."

BEDS data collected over the past two years indicate that there has been an increase in the total number of public school students and teachers who regularly use microcomputers for instructional purposes. The total number of public school students who regularly use microcomputers for instruction increased from 1,592,141 in fall 1988 to 1,688,766 in fall 1989, which is an increase of 96,635 students in the two-year period; and the total number of public school teachers who regularly use microcomputers for instruction rose from 63,976 in fall 1988 to 73,292 in fall 1989, which is an increase of 9,416 teachers over two years.

New York State's schools have used not only computer resources for instruction, they have also used video hardware, programming and production to support the teaching/learning environment. For example, the total number of television receivers (television sets) in the state's schools expanded from 38,362 in fall 1988 to 52,829 in fall 1989. The total number of video players and recorders grew from 22,568 in 1988 to 27,475 in 1989.

Access to public television and cable television increased among our schools from fall 1988 to fall 1989. The total number of schools with access to public broadcast reception expanded from 3,377 in 1988 to 4,804 in 1989, an increase of 961 schools able to receive public television in one year. There were 2,416 schools with cable television (CATV) access in 1988, compared to 2,994 schools with CATV reception in fall 1989, which was a more modest increase of 578 schools.

The fall 1989 BEDS results also show that the state's schools have acquired their television programming chiefly from direct purchase of videocassettes, although live-broadcast, off-air recording and BOCES media centers represent other sources of television programming (see fig. 3).

The installed base of video hardware as well as the increase in television broadcast reception among schools has enhanced the use of the video technology in instruction. For example, there are 91,605 school teachers who use video for instruction. Of this total, 28,921 teachers use video regularly (75 percent or more of a television series) and 62,684 teachers use video occasionally (television programming once a month or at least 10 programs a year). An interesting phenomenon is the total number of schools and teachers who use video production for enhancing instruction, which may reflect the decline in cost of video-production equipment in the market. A total of 1,578 schools indicated that they were involved in video production, and 8,094 teachers reported they used television production in instruction.

During the past half decade, some New York State school districts and BOCES have begun the planning and implementation of distance-learning systems to address the need for increased staff-development opportunities, increased course offerings, and increased access to educational and cultural resources. The phrase *distance learning* is defined on the BEDS Survey as "instruction that occurs at a point distant from the learner with an interactive audio or visual component."

The fall 1989 BEDS Survey results provide current data on the emerging use of this technology application in schools. For example, there are 527 schools currently involved in distance-learning activities. Data gathered on satellite capacities show that 142 schools have purchased satellite dishes for reception of programming and/or distance-learning opportunities (there are 68 schools with Ku-band dishes and 74 schools with C-band dishes). It was also reported by the fall 1989 BEDS Survey that schools are using computer, visual, satellite and audio forms of distance-learning technology to address areas such as staff development, general education and occupational education.

In addition to the expansion in instruc-

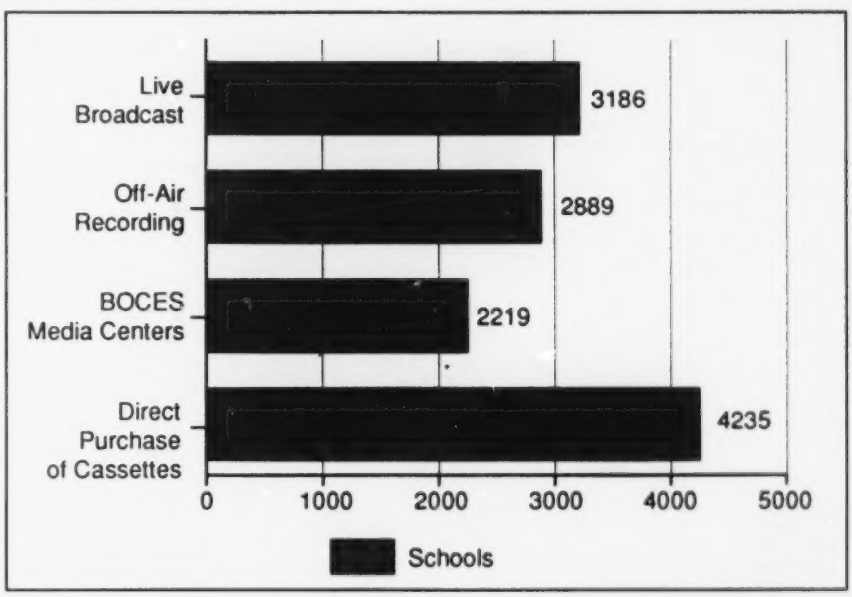

Fig. 3. Sources of Instructional Television and Video Programs in New York State's Public and Non-public Schools, 1989

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tional technology in the educational system, New York State's school districts also purchase on a shared-service-aid basis an array of different computer-management services from the state's 12 BOCES regional information centers (RICs) and regional computer centers (RCCs). These services comprise critical technology resources for supporting management functions in schools.

A survey of school district use of these services is conducted every year as a component of the BOCES RIC/RCC Chapter 793 planning process. The Chapter 793 Plan identifies the future computer-management services that will be provided to school districts in a specific RIC/RCC region. Computer-management services delivered by BOCES to school districts include two major areas: student-management services (which includes census, attendance, grade reporting and scheduling) and financial-management services (which includes payroll, personnel and finance). The results from a recently completed survey of school district use of computer-management services show that 562 school districts currently are using at least one student or financial-management service.

There is also an emerging trend that can be documented over the past few years in the growing number of school districts that use at least one on-line student-management service as contrasted to the decline in use of the older batch-processing mode of delivery (see fig. 4).

School district use of at least one of the three financial-management services through an on-line mode of delivery also increased from 341 districts in 1984-85 to 406 districts in 1987-89. A slight decline in the number of school districts using the financial service through an on-line mode occurred in 1989-90 (see fig. 5). Part of the reason for this change is the increasing number of distributed computer applications. For example, the total number of school districts having distributed data-processing capability through on-site mini- or microcomputers linked to the RIC/RCC mainframe rose from 113 districts in 1984-85 to 2,202 districts in 1989-90.

Conducting surveys of the current acquisition and using instructional and management technology in schools is critical because existing technology resources represent a foundation for embarking on the implementation of the State Education Department's Long-Range Plan for Technology. The current technology resources in the state's schools, such as the number and major models of computers owned by the schools or the number of schools using the statewide TNT system, enhances the ability to plan more precisely and effectively for the future. The current context of technology provides an indication that school districts have already begun to implement the "vision of the future."

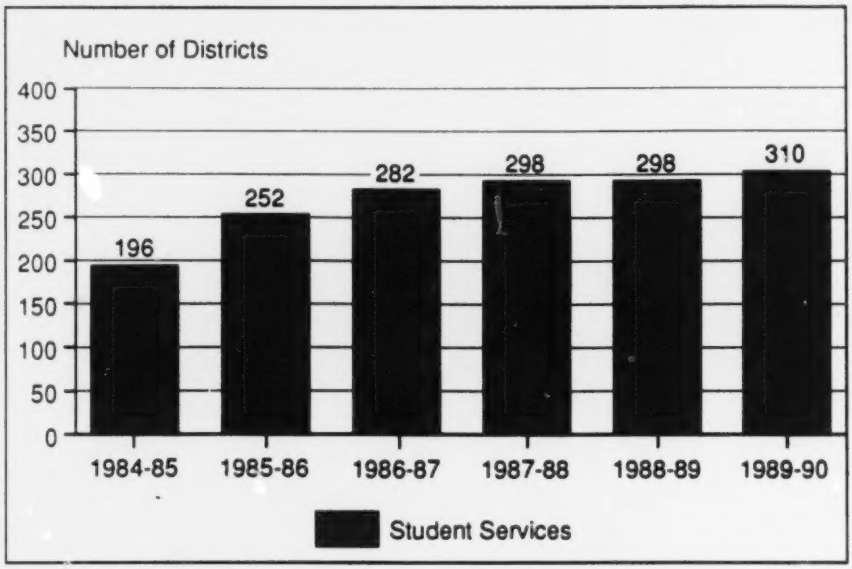

Fig. 4. Districts Using at Least One Online Student Service, 1984-85/1989-90

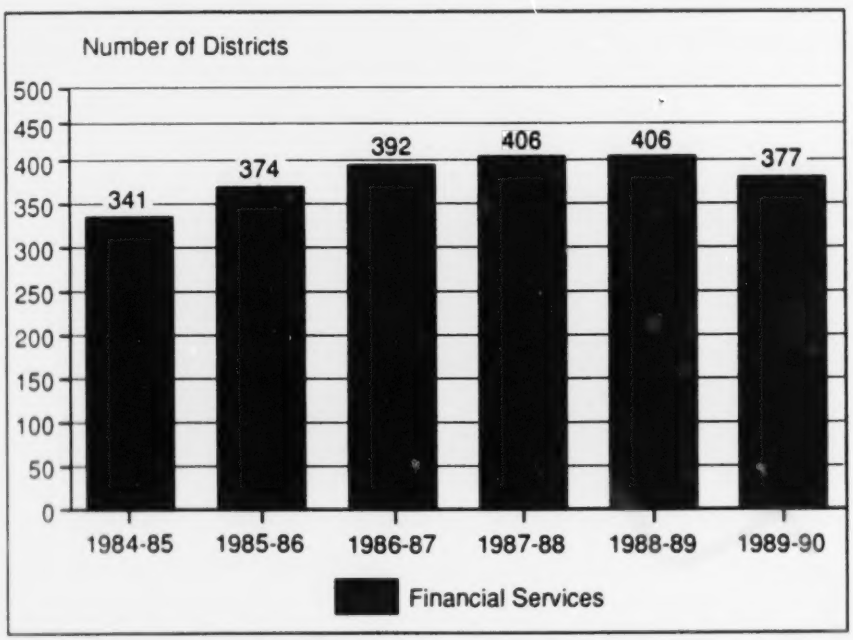

Fig. 5. School District Using at Least One Online Financial Service, 1985-85/1989-90